ARMY NATIONAL GUARD
DG 415-4
TRAINING SITE FACILITIES
DESIGN GUIDE

NATIONAL GUARD BUREAU
INSTALLATIONS DIVISION
111 SOUTH GEORGE MASON DRIVE
ARLINGTON, VA 22204-1382

FOREWORD

This Training Site Facilities Design Guide (DG 415-4) was published by the National Guard Bureau, Army Installation Division (NGB-ARI). DG 415-4 applies to all projects for new construction (including additions) as well as alterations to and rehabilitation and conversion of existing facilities. It is intended to assist the States, Territories, the District of Columbia and design professionals in gaining an understanding of the functions and the unique environmental considerations to address in the construction documents development. This design guide does not contain criteria but refers readers to sources of criteria in other publications that relate directly to the specific technical design requirements.

This Training Site Facilities Design Guide should be used in conjunction with the General Facilities Information Design Guide (DG 415-5) to develop the final project design.

Distribution is limited. However, authorized users of the NGB Guard Knowledge Online (GKO), can obtain an electronic copy at (gkoportal.ngb.army.mil/C12/Installations) Design Guide Library site. All users are encouraged to submit comments and suggestions to improve this document by completing DA Form 2028, "Recommended Changes to Publications and Blank Forms," and sending it directly to:

National Guard Bureau
Installations Division
ARNG Readiness Center
111 South George Mason Drive
Arlington, VA 22204-1382

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CHAPTER 1

GENERAL INFORMATION

1-1 PURPOSE: PERFORMANCE DESIGN GUIDE

This Training Site Facilities Design Guide (DG 415-4) sets forth general functional guidance for the design architect-engineer (A-E) to use in developing the design and construction documents for the Army National Guard (ARNG) training site facilities projects. This design guide is applicable to all construction projects, including new construction, major alterations, rehabilitations and adaptive reuse of existing facilities. All ARNG facilities must be designed and constructed applying the principles and practices of sustainable design and development using U.S. Green Building Council LEED-NC Version 2.2 Green Building Rating System to achieve a "Silver" rating. To aid to the reader in using this design guide, the following are included:

- Appendix A, Unique References, lists reference documents that pertain specifically to this building type; other references cited in this design guide are included in the References in DG 415-5.

- Appendix B, Glossary, defines the acronyms and abbreviations used in this design guide as well as specialized terms that are unique to this design guide.

- Appendix C contains several tables of requirements.

- Appendix D contains the figures that illustrate the explanations in the text.

1-2 FUNCTIONS AND OPERATIONS OF TRAINING SITE FACILITIES

This design guide pertains to the following types of ARNG training site facilities:

- Major training area (MTA) facilities, which provide the land and permanent or semi-permanent facilities (including billeting, dining facilities, ranges, bivouac areas, special training structures, administrative and other logistic buildings, and tank trails) to support ARNG troops during training and/or inactive duty training

- Local training area (LTA) facilities, which provide the land and facilities to support ARNG troops during weekend inactive duty training (IDT) and, in rare cases, two-week annual training (AT)

- Standard Design Guidance for Training Ranges (Live Fire) Combined Arms Collective Training Facility, Shoot House, MOUT, Urban Assault Course, ASP and RETS are provided by USACE Huntsville Division Huntsville, AL.

CHAPTER 2

MAJOR TRAINING AREA FACILITIES

2-1 GENERAL INFORMATION

2-1.1 Scope

An MTA generally comprises two operational land areas:

- The cantonment area
- The area for bivouacking, ranges, special training structures, and ammunition storage

These areas are used for the weekend IDT and two-week AT that each soldier (unless exempted) is required to perform.

2-1.2 Standards

Detailed guidance regarding design criteria and construction standards not found in this design guide is available from the State construction and facilities management officer (CFMO) or NGB-ARI. The authorized space criteria and outside support items for facilities being designed are to be obtained from the approved NGB program documents. The design A-E should be provided with the MTA Master Plan that has been approved by the ARNG Chief and be instructed to follow it during the design process. Any deviations from the Master Plan must be approved by the State Military Department, CFMO.

2-1.3 Sizing

The MTA is sized based on troop usage determined by the State Military Department and NGB-ARI. Sizing is the basis for determining the number of troop billets authorized. The number of troop billets ranges from the accommodation of a few companies (each consisting of 100 to 200 troops), one or more battalions (each generally 500 or more troops), one or more brigades (each generally three battalions), or a division (three brigades).

2-2 STAFF ORGANIZATION

2-2.1 Battalion, Brigade, Group, or Command Headquarters

(Similar to 2-2.2, Units and Detachments maybe located in several States)

2-2.2 Organizational Responsibilities

Each command headquarters has a commanding officer (CO) with four major administrative staff elements (personnel, intelligence, operations, and logistics). The brigade, group, or command headquarters has one additional major staff element (civil-military operations), for a total of five.

2-2.2.1 Personnel Staff Element

The personnel staff element has the following primary responsibilities:

- Unit strength maintenance
- Personnel service support
- Discipline
- Law and order
- Civilian personnel
- Administrative support for other personnel
- Safety and accident prevention
- Headquarters management

2-2.2.2 Intelligence Staff Element

The primary responsibilities of the intelligence staff element are producing intelligence, counterintelligence, and intelligence training.

2-2.2.3 Operations Staff Element

The primary responsibilities of the operations staff element are unit operations, organization, and training.

2-2.2.4 Logistics Staff Element

The responsibilities of the logistics staff element are supply, transportation, and services.

2-2.2.5 Civil-Military Operations Staff Element

The responsibilities of the civil-military operations staff element are civil affairs and civil-military relationships.

2-3 DESIGN GUIDANCE FOR PROGRAM SPACES – CANTONMENT AREA FACILITIES

2-3.1 General Information

Cantonment area facilities may consist of:

- Open bay barracks
- Private room bachelor officer quarters (BOQ)
- Bachelor enlisted quarters (BEQ)
- Battalion headquarters

- Battalion maintenance shelter
- Battalion supply and ration breakdown
- Company supply and administration
- Dining facilities
- Indoor physical fitness area
- Outdoor running track
- Site headquarters
- Troop issue subsistence activity

(See Figure 1, Battalion Set Site Arrangement, in Appendix D). Adequate power for technology related to communication systems and generator backup equipment should be provided.

Each of these cantonment area facilities may be constructed as a separate building, or several functions may be combined into one building, called a “consolidated facility" (refer to Paragraph 2-3.13, Consolidated Facilities, for more information). Generally, the approved program documents and the Master Plan identify whether separate, consolidated, or both separate and consolidated facilities are to be designed for an MTA.

2-3.2 **Barracks, Toilets, and Laundry**

The barracks may be an open-bay sleeping area for enlisted personnel (staff sergeant [E6] and below), with consolidated toilets, or it may consist of four-person modules with toilets and showers. A laundry may also be included. The barracks may be designed as a separate building or consolidated in one building that includes billeting, dining, and company supply and administration.

Barracks are to be sized for the number of personnel and number of buildings stated in the approved program documents and the Master Plan. The barracks size is generally in personnel increments of 40 (40, 80, 120, 160, etc.).

2-3.2.1 **Barracks**

The approved program documents should indicate whether the facility is a separate or consolidated building. The program documents also show the net floor area for billeting, laundry (when authorized), and the toilets. Generally, the minimum plumbing fixtures should be as stated in the plumbing code. See Figure 2, Barracks Partial Plan, in Appendix D.

2-3.2.2 **Toilets**

Figure 3, BOQ/BEQ Partial Plan, in Appendix D is one example of a separate building layout for an open bay barracks, with a toilet area, for 40 to 160 persons.

2-3.2.3 **Laundry**
A laundry area, if authorized in the approved program documents, may be added to the barracks. The laundry is generally in a central location adjacent to the toilet room and mechanical room area to reduce utility runs. See Figure 3.

2-3.3 **Bachelor Officer and Enlisted Quarters**
The BOQ and BEQ are billeting facilities comprising semi-private and private rooms with semi-private and private toilets. The BOQ and BEQ must be sized for the number of personnel, the functional areas, and the number of buildings as stated in the approved program documents and the Master Plan. The number of rooms in a single building varies; the minimum is approximately 15 rooms. These facilities may be separate buildings and not consolidated with any other functional area such as barracks, dining, headquarters, and company supply and administration. See Figure 3.

The building generally includes the sleeping areas; laundry (if authorized); toilets; and a small mechanical, electrical, and custodial room. A laundry area, if shown in the approved program documents, may be located in each separate BOQ or BEQ building and be designed to the authorized net floor areas. If the design capacity, type of functional areas, and number of buildings are not clearly stated in the approved program documents, the State Military Department, CFMO will provide specific guidance.

2-3.4 **Battalion Headquarters Buildings**
Generally, the commanding officer, executive officer, personnel, intelligence, and operations staff officer functions are located in the battalion headquarters buildings. The logistics staff officer functions are located in the battalion supply and ration breakdown building. All the staff officers, including the logistics officers, are located in the brigade, group, or command headquarters buildings.

2-3.5 **Battalion Maintenance Shelter**
The maintenance shelter is used to provide organizational maintenance on military equipment (such as tanks, trucks, personnel carriers, and compressors) and is normally located within the battalion motor pool. It does not require any special installed equipment to help in the performance of the maintenance mission because all necessary equipment is portable or movable and brought in by the maintenance personnel. The remainder of this shelter is normally enclosed on three sides unless the approved program documents justify heating, in which case four sides with vehicle doors are required. *(Address water and compressed air needed.)*

2-3.5.1 **Dimensional Layout**
There should be two maintenance workbays, with no columns between them. This provides clear floor area which allows space for the repair and maintenance of a large piece of military equipment. Some space should be used for an office and a toilet. The clear height should be 15 ft for the workbay area and 10 ft for the support area.

2-3.5.2 **Doors and Windows**
If the maintenance shelter is enclosed on three sides, only one door may be installed; if it is enclosed on four sides, two personnel doors should be adequate. A shelter

enclosed on four sides may have four insulated vehicle doors 14 ft by 16 ft wide or two insulated vehicle doors 14 ft by 28 ft wide to provide pull-through capability and to allow better air circulation during mild and hot weather. Windows may be authorized, and vehicle doors may include window lights.

2-3.5.3 Floor Construction

The floor of the maintenance shelter should be a slab on grade of concrete in accordance with the recommendations in DG 415-5, Chapter 6, Common Architecture and Engineering Technical Guidelines.

2-3.5.4 Building Systems

If heating is authorized for the maintenance shelter, unit heaters or infrared heaters should be provided, with adequate insulation, supported by heat transmission factor calculations. Ventilation should be provided by two general area exhaust fans at the high point of the roof and two wall exhaust fans located approximately 12 in. above the floor.

If heating is not authorized, no insulation or ventilation is necessary (even on the underside of the roof) because one side of the shelter normally does not have a wall. This provides adequate air circulation to eliminate any serious condensation problems and engine exhaust accumulation.

2-3.5.5 Pre-Engineered Metal Shelter

A pre-engineered metal shelter may be used if economically feasible and sufficiently durable for the intended use. The roof and wall panels should be cold-formed steel sheets. The exterior finish should be a system that provides the appropriate life expectancy. Roof and wall panels may be aluminum with a factory-applied coating. Roof panels may contain some translucent panels, provided those panels can be substituted for metal panels without the need for special design and construction. A 20-year warranty should be obtained for the roof.

2-3.6 Battalion Supply and Ration Breakdown Building

The supply and ration breakdown building contains supply storage, a supply office, a small miscellaneous storage area, a ration breakdown area, and toilets. The supply storage area is used to store supplies needed to support the troops, separate like items, and distribute nonperishable (non-food) items. The ration breakdown functional area is used to store food supplies, separate them into like items, and distribute the supplies needed for preparing meals in the dining facilities for the troops. Industrial-grade open shelving attached to the floor may be included in the design supported by Federal construction funds. The surface area of the shelving should be equal to or less than the net floor area of the ration breakdown or supply storage area. The structural clear height should be approximately 10 ft.

2-3.7 Supply and Administration

The supply and administration facility may be for a single company (unit) or it may be for two companies (units). The supply functions consist of storing and distributing nonperishable supply items required for the troops to perform their training missions. The administrative functions are some of the same functions as addressed in Paragraph

2-2.1, Battalion Brigade, Group, or Command Headquarters, except at a lower echelon. The supply and administration facility is often constructed in a consolidated building that also includes the billeting for enlisted personnel, and/or a dining facility for all personnel.

2-3.8 Dining Facilities

The Dining Hall (mess) facilities are located near troop billets and company supply and administration facilities. The enlisted personnel barracks, company supply and administration, and/or dining facilities may be combined into one consolidated facility; however, the dining facilities discussed here are intended to be located in an independent building. For specific design guidance on stand-alone buildings refer to UFC 4-722-01 Dining Facilities

2-3.8.1 Size of Facility

The design options for dining facilities include three basic standard sizes: 200 person, 400 person and 800 person facilities. The facility size indicates the population to be served; it does not imply that this number of persons is seated simultaneously. Reference NG PAM 415-12 Chapter 5, for the facility space allowances.

2-3.8.2 Standard Drawings and Equipment Schedules

Standard drawings and kitchen equipment schedules can be obtained through the following:

U.S. Army Quartermaster Center and School
Attn: ATSM-CES-OE, 1201 22nd Street, Bldg. P-5000
Fort Lee, VA 23801-1601
Commercial (804) 734-3450
DSN: 687-3354

Dimensions and equipment authorizations vary depending on the number of personnel to be supported by the facility. The kitchen equipment schedules indicate which pieces of equipment are to be included in the design as contractor furnished and contractor installed and which equipment is to be government furnished and contractor installed. In all cases, the design is to include all necessary utility connections. See Figures 1 and 2, Kitchen Equipment Layouts in DG 415-5.

2-3.9 Indoor Physical Fitness Area

The net floor area authorized for the indoor physical fitness area should be obtained from the approved program documents. The net floor space authorized may be partitioned to provide three separate functional areas:

- An exercise room, which may be an unobstructed floor area for exercising
- A weight room with exercise machines and space for free-weight exercises
- An office and storage room which provides space for keeping exercise records, supplies for programs and first aid, sign-out equipment, and a work station for the person in charge

The planned usage of the three separate areas may vary depending on the availability of exercise equipment, the equipment selected, the clearances between equipment, and the size of each exercise station. Refer to DG 415-5, Chapter 5, Common Functional Planning and Building Design Guidelines, for more general considerations in the design of this space.

2-3.10 Outdoor Running Track

An outdoor running track of at least ½-mile distance should be provided in addition to the indoor physical fitness area. Lighting for night running should be provided, along with a parking facility.

2-3.11 Site Headquarters

The site headquarters facility, when authorized, is for a battalion-sized MTA or larger if NGB has authorized a full-time operating staff. The functions of the full-time operating staff are as follows:

- Program and maintain all buildings, ranges, and real estate.
- Issue billeting, supplies, materials, and food items.
- Purchase and contract for services, supplies, materials, and food items.
- Provide accounting and financial services for the overall operation of the MTA in support of the troop training mission.

The site headquarters may be included within another training site building or may be a separate building. The actual total net floor area (including circulation; toilets; and the mechanical, electrical, and custodial room), plus the size and type of individual functional areas, should be obtained from the approved program documents and should be consistent with the Master Plan.

2-3.12 Troop Issue Subsistence Activity

The TISA facility stocks all perishable and nonperishable items needed to supply the dining facilities or field kitchens operated at an MTA. The TISA facility has the capability to store refrigerated, non-refrigerated, and frozen food and grocery items. A TISA is authorized only at locations where commercial supplies are not available within a reasonable distance. If a TISA is to be designed, the State CFMO may contact NGB-ARI to obtain the necessary design guidance. If a TISA is authorized, a battalion supply and ration breakdown building is not necessary because supplies are drawn directly from the TISA.

2-3.13 Consolidated Facilities

The authorized supply and administration, dining facility, barracks, laundry, and toilet areas may be consolidated into a single building. The approved program documents and the Master Plan should be used to determine the facilities, net floor area, and circulation patterns that may be included in the single consolidated building.

2-3.14 **Simulation Facility**

These buildings or rooms are used for instructions and training purposes and permanent storage of simulation devices. The simulation devices maybe motion or non-motion based to train crews on various weapon systems. The design team must consult the simulation device for specific environmental and utilities requirements.

2-3.15 **Aviation Facilities**

Refer to the DG 415-3, Aviation Facilities Design Guide, for guidance related to the design of aviation facilities.

CHAPTER 3

LOCAL TRAINING AREAS

3-1 GENERAL DESCRIPTION

3-1.1 Scope

The type of construction for an LTA facility should be consistent with training in a field environment. Construction may be temporary or semi-permanent, as shown in the approved program documents and the Master Plan. An LTA may comprise two operational land areas:

- The cantonment area
- The location of the bivouac areas, ranges, and special training structures

3-1.2 Standards

The design A-E should be provided with the LTA Master Plan that has been approved by the Chief, Army National Guard, with any deviations approved by the State Military Department, CFMO. Detailed guidance regarding technical criteria and construction standards is available from the State CFMO or NGB-ARI. The authorized space requirements and outside support items for facilities being designed are to be obtained from the approved program documents.

3-2 LTA SUPPORT FACILITIES

The following paragraphs discuss many of the items needed to support an LTA. Some LTAs may have existing facilities that can be converted or rehabilitated and operated at equal or less cost than constructing new facilities. (This should be addressed in the approved program documents)

3-2.1 Tent Floors

Concrete or wooden tent floors can be used for general-purpose medium or large tents. The concrete floor should generally be 4 in. thick. Wooden floors may be constructed from 1-in. or 2-in.-thick treated lumber, depending on the distance between unsupported floor members. If electric power and potable water are within or near the area of the tent floor construction, the items in the following table are authorized.

LTA Support Facilities

Use	Hose Bibb	110-Volt Duplex Outlet
Squad Tent (billeting)	One	One
Mess Tent	Two	One plus (one for every two pieces of electrical equipment)
Company Supply & Administration	None	Two
Headquarters (battalion or higher)	None	One plus (one for every two pieces of electrical equipment)

3-2.2 Field Kitchens

When the approved program documents authorize temporary or semi-permanent construction, the field kitchens are to consist of a 4-in.-thick concrete floor (of the same construction as for similar tent floors), a lightweight shingled or metal roof, 4-ft-high concrete block or wood siding with screens above, and wood shutters to cover the screens to secure the building when not in use.

3-2.3 Dining (Mess) Shelter

When the approved program documents authorize temporary or semi-permanent construction, the mess shelters are to consist of a 4-in.-thick concrete floor, a lightweight shingled or metal roof, and no sides. Walls that are 4 ft high and constructed of concrete block or wood siding, with screens above and wood shutters to cover the screens, may be authorized if justified. The program documents should be reviewed to determine whether sides have been approved.

3-2.4 Latrine

Latrine construction should consist of a concrete floor; a lightweight shingled or metal roof structure; and sides of wood, metal, or concrete block. Ventilation openings should be screened and shuttered. No windows are authorized. Unless an existing sanitary system is available at the site, concrete holding tanks or pits should be provided according to applicable Federal, State, and local environmental laws and regulations. Other types of construction may be considered, provided that the life cycle cost analysis is equal to or less than that of this latrine design.

3-2.5 Roads and Parking

The detailed information for the design of roads and parking can be found in the paragraphs addressing military and privately owned vehicle parking in DG 415-5, Chapter 6. The table below shows the allowable number of parking spaces and associated paved areas for administrative and training functions.

Military Vehicle Parking Requirements

Type of Facility	Parking Spaces	Paved Area (yd^2)
Headquarters (Brigade, Group, Command)	12	288
Headquarters (Battalion)	8	192
Battalion Supply and Ration Breakdown	8	192
Company Supply & Administration		
(2 Unit)	8	192
(1 Unit)	4	96
Dining Facilities		
200 Person	4	96
400 Person	6	144
800 Person	8	192

CHAPTER 4

EDUCATIONAL FACILITIES

4-1 GENERAL DESCRIPTION

This chapter contains functional design guidance for ARNG educational facilities, including all schools, regional training institutes, State military education facilities, and their supporting requirements. Figure 4 illustrates the basic site arrangement of a regional training institute.

4-2 SCHOOLS

4-2.1 General Description

Refer to USACE-Norfolk District; TRADOC Standard Design; General Instruction Building (GIB) and UFC 4-171-02A Design Guide: U.S. Army Service Schools.

4-3 DESIGN GUIDANCE FOR PROGRAM SPACES

4-3.1 Administration Spaces

4-3.1.1 General Administration Offices

The general administrative office area may have several individual offices, but the major portion should be an open bay office area in which modular or conventional furniture may be installed.

4-3.1.2 Supply and Publication Storage

These storage spaces may include an amount of shelving surface equal to the net floor area of the storage room(s). The shelving should be made of wood or metal and attached to the floor.

4-3.2 Material Reproduction and Mail Center

The reproduction and mail center should have an electrical outlet for each piece of reproduction equipment. The design may also include a commercially fabricated built-in mail and distribution system.

4-3.2.1 Toilets/Showers/Lockers

Refer to DG 415-5, Chapter 5, for design guidance related to toilet and shower areas. The locker room is intended for storage of individual equipment. The total authorization of the size, type, and number of lockers for each educational facility is identified by the State CFMO or obtained from the approved program documents.

4-3.3 Educational Spaces

4-3.3.1 Classrooms

The classrooms are used for the officers' candidate school and for teaching the basic non-commissioned officers' development course, the platoon leadership development course, advance courses, military occupation specialty qualifications (MOSQ) courses,

and other, miscellaneous courses. Larger classrooms (900 ft^2 and over) may be subdivided by using acoustically insulated accordion or folding partitions. Sound deadening to attain a sound transmission coefficient (STC) of 40 or better should be provided at the movable partition location to allow the subdivided areas to operate without disturbing each other. The larger classrooms may have two fixed speaker's platforms (one for each subdivided area). In addition, the following should be provided:

- Lighting controls at a point convenient to the speaker or instructor as well as at the door for all classrooms
- Chalkboards or marker boards (up to 64 ft^2 for classrooms 900 ft^2 and larger and 32 ft^2 for all other classrooms) with map rails
- Generally, one 110-volt electrical duplex outlet on each of three walls and two on the wall at the front of the room for classrooms smaller than 900 ft^2
- Generally, two 110-volt duplex electrical outlets on each of three walls and two to four on the wall and platform at the front of the room for classrooms 900 ft^2 and larger (If the larger classroom is subdivided with a movable partition, each subdivided area should have one-half the total number of electrical outlets in the classroom.)
- (Optional) A 110-volt duplex overhead outlet if an overhead mounted projector is anticipated
- A map rail system consisting of separate sections of approximately 8 linear ft (LF) for rooms smaller than 900 ft^2 and 16 LF for rooms 900 ft^2 and larger

4-3.3.2 **Instructions Preparation and Counseling**

This office area is used by the class instructors to prepare class plans and schedules, analyze student assignments, and counsel students. The office area should typically be one large space with pre-wired work stations. Generally, an instructor's work station requires approximately 60 ft^2, which includes a desk or work station, two chairs (one for the instructor and one for the student being counseled), and circulation space. No chalkboards should be planned for this area. One 110-volt duplex electrical outlet per instructor is authorized.

4-3.3.3 **Multi-Purpose Training Area**

This area, to be used for a variety of training purposes, should be one large room with a level floor. This large room may be subdivided, when required, using an accordion or folding partition. Sound-deadening material to attain an STC of 40 may be provided for the movable partition to allow the subdivided areas to operate without disturbing each other. Lighting controls should be installed at entrances to the area or to the subdivided area. A maximum of three 32-ft^2 chalkboards or marker boards with map rails may be provided. Generally, one 110-volt duplex electrical outlet may be authorized for each 12

ft of the perimeter wall. However, this is only to determine the total number of outlets; the outlets may be located where required for teaching or training purposes.

4-3.3.4 **Auditorium**

The floor of the auditorium may be sloped approximately 1 ft in 12 ft from the speaker's platform. The speakers' platform area should have approximately four 110-volt duplex outlets (strategically placed), lighting controls, and a 10-ft by 8-ft ceiling-mounted pull-down projection screen. The side and back walls may have a maximum of three 110-volt duplex electrical outlets per wall. A speaker system with a microphone, amplifier, speaker(s), and cable may be provided. Fixed seats may be authorized. To allow flexibility in the use this area for other functions, the design A-E, user, and State CFMO may consider a level floor with no fixed seating. The ceiling height should be 9 ft, or the height to the underside of the exposed structure should be 10 ft at the lowest point.

4-3.3.5 **Library**

The library may be located as a part of, near, or adjacent to the learning center. Industrial steel or wood shelving that is 8 ft high, attached to the floor, and equal to the library net floor area may be provided. Space should be allocated for a small desk for the librarian, a standard-size two-drawer filing cabinet, and one or two small-sized reference tables (approximately 3 ft by 5 ft) with chairs. These items (the desk, filing cabinet, tables, and chairs) are not to be purchased with Federal construction funds. Four 110-volt duplex electrical outlets, located for easy access, are authorized. A telephone outlet is also authorized.

4-3.3.6 **Learning Center**

The learning center should be located adjacent to, or be combined with, the library. This space may be equipped with individual study carrels that are pre-wired and installed. It should have built-in steel or wood shelving and/or racks (limited to the longest wall from the floor to a height of 8 ft) and electrical outlets to accommodate AV equipment in the study carrels. For the purpose of locating outlets and allocating floor space, the carrels can be assumed to be 4 ft by 2 ft 6 in.

4-3.3.7 **Distance Learning Center**

The distance learning center provides space for delivery of remote training and educational resources. It requires accommodation of voice and data links.

4-3.3.8 **Training Device/Simulation Center**

The space and electrical service requirements should be coordinated with the equipment being supplied.

4-3.3.9 **Training Aid and Audio/Visual Storage Room(s)**

The training aid and AV storage room(s) should be adjacent to and preferably have direct access to the learning center or classrooms. These room(s) should be designed to maximize wall space for book storage. One full wall of built-in steel or wood shelving and/or racks should be provided for each room. Shelving in the AV storage area should be 36 in deep, with a 20-in. vertical clearance, to accommodate relatively bulky equipment.

4-3.3.10 Test Control Storage

4-3.3.11 Break Area
Refer to DG 415-5, Chapter 5.

4-3.3.12 Physical Fitness Area
The physical fitness area should have a net floor area of approximately 1,000 ft^2. The authorized floor space may be partitioned off to provide three separate functional areas:

- An exercise room, which may be just an unobstructed floor area for exercising
- A weight room for exercise machines and free-weight exercises
- An office and storage room, which has space for keeping exercise records, programs, first aid supplies, and equipment signout forms and which has a work station for the person in charge

These separate functional areas may vary depending on the availability of exercise equipment, equipment selected, clearances between equipment, and size of each exercise station. A starting point for sizing the three areas could be 200 ft^2 for the office and storage room, 400 ft^2 for the weight room, and 400 ft^2 for the exercise room. The three areas may vary from these sizes, depending on the actual planned usage, but the total net floor area is to be held to the authorized amount within the flexibility rule. Refer to DG 415-5, Chapter 5, for more information.

4-3.4 Additional Spaces

4-3.4.1 Toilets (Male and Female)
Refer to DG 415-5, Chapter 5.

4-3.4.2 Outside Support Items
The design guidance for privately owned vehicle and military vehicle parking, sidewalks, access roads, and fine grading and seeding is included in DG 415-5, Chapter 6.

4-3.5 Dining Area and Kitchen
Dining facilities should be located near troop billeting or in the same building.

4-3.5.1 Size of Dining Facility
Three different capacity levels are considered, depending on the size of the dining facility:

- 200 persons
- 400 persons
- 800 persons

The size of the facility indicates the population to be served; it does not imply that this number of persons is seated simultaneously. See Figure 1 and 2 Kitchen Equipment Layouts in DG 415-5.

4-3.5.2 **Drawings and Kitchen Equipment Schedules**
Standard drawings and kitchen equipment schedules are referenced in Design Guide (DG) 415-5, General Facilities Information Appendix D. The Proponent for the Standard Kitchen Equipment and Layout is as follows:

U.S. Army Quartermaster Center and School
Attn: ATSM-CES-OE, 1201 22nd Street, Bldg. P-5000
Fort Lee, VA 23801-1601
Commercial (804) 734-3450
DSN: 687-3354

Dimensions and equipment authorizations vary depending on the number of persons to be supported by the facility.

4-3.6 **Facility Maintenance and Custodial Area**
Refer to DG 415-5, Chapter 5.

4-3.7 **Mechanical, Electrical, and Telecommunication Room(s)**
Refer to DG 415-5, Chapter 5.

4-3.8 **Billeting**
The student billets; toilets; laundry room; and mechanical, electrical, and custodial room should follow the design guidance for the BOQ and BEQ provided in Paragraph 2-3.3.

CHAPTER 5

UNIQUE ARCHITECTURAL AND ENGINEERING TECHNICAL REQUIREMENTS

(To Be Determined and Developed As Required)

CHAPTER 6

UNIQUE SUBMISSION REQUIREMENTS

(To Be Determined and Developed As Required)

CHAPTER 7

UNIQUE DESIGN REVIEW DIRECTIVES REQUIREMENTS

(To Be Determined and Developed As Required)

APPENDIX A

UNIQUE REFERENCES

The following lists criteria in the form of regulations and industry standards that are to be used to design ARNG training site facilities and are not included in the References in DG 415-5. The design A-E should use the current applicable edition of all references.

GOVERNMENT PUBLICATIONS:

Unified Facilities Criteria

UFC 4-171-02A U.S. Army Service Schools
UFC 4-722-01 Dining Facilities
UFC 4-860-03FA Railroad Track Standards
UFC 1-900-01 Methods for Reuse, Recycling

NON-GOVERNMENT PUBLICATIONS:

APPENDIX B
GLOSSARY

B-1 ACRONYMS AND ABBREVIATIONS

A-E	architect-engineer
ARNG	U.S. Army National Guard
AT	annual training
AV	audio/visual
BEQ	bachelor enlisted quarters
BIIL	basic issue items list
BOQ	bachelor officer quarters
CFMO	construction and facilities management officer
CO	commanding officer
DG	design guide
E6	staff sergeant
ft	foot/feet
HVAC	heating, ventilation, and air-conditioning
IDT	inactive duty training
in.	inch(es)
LF	linear feet
LTA	local training area
MOSQ	military occupation specialty qualification
MTA	major training area
NGB-ARI	National Guard Bureau, Army Installations Division
STC	sound transmission classification

TDA	table of distribution and allowances
TISA	troop issue subsistence activity
TOE	table of organization and equipment
yd	yard(s)

B-2 UNIQUE SPECIALIZED TERMS

Billet	A lodging for troops
cantonment	A group of more or less temporary buildings for housing troops.
Consolidated Facility	A building in which several functions of a cantonment area facility are combined.
Local Training Area (LTA)	Land and facilities to support ARNG troops during weekend inactive duty training and, in rare cases, two-week annual training. An LTA may comprise two operational land areas: 1) the cantonment area and 2) the location of the bivouac areas, ranges, and special training structures.
Major Training Area (MTA)	Land and permanent or semi-permanent facilities (including billeting, dining facilities, ranges, bivouac areas, special training structures, administrative and other logistic buildings, and tank trails) to support ARNG troops during training and/or inactive duty training.
Troop Issue subsistence activity (TISA facility)	A facility for stocking all perishable and nonperishable items needed to supply the dining facilities or field kitchens operated at an MTA.

APPENDIX C

TABLES

Table 1. Proximity Requirements for an Educational Facility

	General Administration	Medical/Aid Station	Supply	Publication Storage	Material Reproduction/Mail Ctr.	Weapons/Ammunition Storage	Toilets/Showers/Lockers	Classrooms	Instructor Preparation/Counsel.	Multi-Purpose Training Area	Auditorium	Library	Learning Center	Distance Learning Center	Training Device/Simulation Ctr.	Training Aid Storage	Audio Visual Storage	Test Control Storage	Break Area	Physical Fitness	Toilets	Dining Area & Kitchen	Billeting
General Administration		2	1	1	1	3	3	2	2	2	2	2	2	2	2	N	N	N	2	3	3	3	3
Medical/Aid Station	2		N	N	N	N	2	N	N	N	3	3	3	3	3	3	N	N	2	2	2	3	2
Supply	2	N		1	2	3	N	N	N	N	3	3	3	3	3	N	N	N	N	N	N	3	3
Publication Storage	2	N	1		2	N	N	N	N	N	3	3	3	3	3	N	N	N	N	N	N	3	3
Material Reproduction/Mail Ctr.	2	N	1	1		N	N	3	N	N	3	3	3	3	3	N	N	N	N	N	N	3	3
Weapons/Ammunition Storage	3	3	N	N	N		N	3	3	3	3	3	3	3	3	N	N	N	3	3	3	3	3
Toilets/Showers/Lockers	2	2	N	N	2	N		1	2	1	1	2	2	2	2	N	N	N	2	1	2	2	2
Classrooms	3	N	3	3	3	3	3		1	2	2	1	1	1	1	1	1	1	2	3	2	3	3
Instructor Preparation/Counsel.	3	N	3	3	3	3	3	1		2	2	1	1	1	1	1	1	1	2	3	2	3	3
Multi-Purpose Training Area	3	N	3	3	3	3	2	1	1		2	1	1	1	1	2	2	N	2	3	2	2	3
Auditorium	3	N	3	3	3	3	3	2	N	2		3	N	N	N	N	N	N	2	3	1	3	3
Library	3	N	N	N	3	3	3	2	2	2	3		1	1	1	N	N	N	3	3	2	3	3
Learning Center	3	N	N	N	3	3	3	1	1	2	N	1		1	1	1	1	1	2	3	2	3	3
Distance Learning Center	3	N	N	N	3	3	3	1	1	2	N	1	1		1	1	1	1	2	3	2	3	3
Training Device/Simulation Ctr.	3	N	N	N	3	3	3	1	1	2	N	1	1	1		1	1	1	2	3	2	3	3
Training Aid Storage	N	N	N	N	N	N	N	1	2	2	N	N	1	1	1		1	1	N	N	N	N	N
Audio Visual Storage	N	N	N	N	N	N	N	1	2	1	2	2	1	1	2	1		1	N	N	N	N	N
Test Control Storage	N	N	N	N	N	N	N	1	1	1	N	N	2	2	2	2	2		N	N	N	N	N
Break Area	2	N	N	N	N	N	2	2	2	2	2	N	N	N	N	N	N	N		2	2	N	N
Physical Fitness Area	3	N	N	N	N	N	1	3	3	2	3	3	3	3	3	N	N	N	2		2	N	N
Toilets	2	N	N	N	N	N	3	2	2	1	1	2	2	2	2	N	N	N	2	3		2	N
Dining Area & Kitchen	3	3	3	3	3	N	N	3	3	3	3	3	3	3	3	N	N	N	3	2	2		2
Billeting	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	

Functional Relationship Requirements — 1 **Immediate** 2 Close 3 Isolated N Neutral

All designated areas are from NG PAM 415-12, Table 6-1.

Table 2. Architectural Interior Finishes

	FUNCTIONAL AREA	FLOOR	BASE	WAINSCOT	WALLS	CEILING*
Administration						
1	General Administration	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
2	Medical/Aid Station	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
3	Supply	VCT	RB	--	GWB/P	ACST
4	Publication Storage	VCT	RB	--	GWB/P	ACST
5	Material Reproduction/ Mail Center	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
6	Weapons/Ammunition Storage	CONC/H		Epoxy (Note 2)	GWB/P	ACST
7	Toilets/Showers/Lockers	CT	CT	CT	CT (Note 3)	GWB/P
Education						
1	Classrooms	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
2	Instructor Preparation/ Counseling	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
3	Multi-Purpose Training Area	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
4	Auditorium	CPT	RB	Epoxy (Note 2)	GWB/P	GWB/P
5	Library	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
6	Learning Center	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
7	Distance Learning Center	CPT	RB	Epoxy (Note 2)	GWB/P	ACST
8	Training Device/ Simulation Center	CONC/H		Epoxy (Note 2)	GWB/P	ACST
9	Training Aid Storage	VCT	RB	Epoxy(Note 2)	GWB/P	ACST
10	Audio/Visual Storage	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
11	Test Control Storage	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
12	Break Area	VCT	RB	Epoxy (Note 2)	GWB/P	ACST
13	Physical Fitness Area	(Note 1)	RB	Epoxy (Note 2)	GWB/P	ACST
14	Toilets	CT	CT	CT	GWB/P	GWB/P
Dining Facility						
1	Dining Area	VCT	RB	Epoxy (Note 2)	GWB/P	GWB/P
2	Kitchen	QT	QT	QT	GWB/P	GWB/P
Billeting						
1	Living/Sleeping Area	CPT	RB	Epoxy (Note 2)	GWB/P	GWB/P
2	Toilet/Shower	CT	CT	CT	CT (Note 3)	GWB/P

***Ceiling heights are indicated in Table 7.**

TABLE 2 – ABBREVIATIONS

ACST	acoustical suspended tile, 2 ft by 4 ft or 2 ft by 2 ft
CMU	concrete masonry unit
CONC/H	clear liquid hardener/sealer finish over exposed concrete floor
CPT	carpet - A 26 to 28 oz. (face weight), permanent static-free (2.5 kV or less), cut or loop pile nylon or acrylic commercial-grade.
CT	ceramic tile (thick or thin set) and ceramic or marble threshold
GWB/P	gypsum wallboard, painted (using enamel, latex, or paint of an equivalent cost)
QT	quarry tile
RB	resilient base
VCT	vinyl composition tile – VCT with a thickness 3/16 in. or less) on monolithic concrete finish and with a final wax coat, if recommended by the tile manufacturer authorized.

TABLE 2 – NOTES

1. Rubberized athletic flooring with flexible strength meeting OSHA recommendations of 0.5 Standard coefficient of friction per ASTM D-2047.

2. Epoxy is the base paint (coating not to exceed two-application system).

3. Ceramic tile walls in shower area should extend to the ceiling.

Table 3. Doors, Hardware, Storage, and Shelving

	FUNCTIONAL AREA	DOORS	HARDWARE	STORAGE/ SHELVING
Administration				
1	General Administration	solid core wood	commercial/keyed	N/A
2	Medical/Aid Station	solid core wood	commercial/keyed	cabinets (lockable)
3	Supply	solid core wood	commercial/keyed	shelving & cabinets
4	Publication Storage	solid core wood	commercial/keyed	shelving & cabinets
5	Material Reproduction/ Mail Center	hollow metal	commercial/keyed	shelving, cabinets & countertops
6	Weapons/ Administration Storage	hollow metal	(Note 1)	N/A
7	Toilets/Showers/Lockers	hollow metal	N/A	N/A
Education				
1	Classrooms	solid core wood	commercial keyed	cabinets (lockable)
2	Instructor Preparation/ Counseling	solid core wood	commercial keyed	cabinets (lockable)
3	Multi-Purpose Training Area	hollow metal	commercial keyed	cabinets (lockable)
4	Auditorium	solid core wood	commercial keyed	N/A
5	Library	solid core wood	commercial keyed	shelving & cabinets
6	Learning Center	solid core wood	commercial keyed	shelving & cabinets
7	Distance Learning Center	solid core wood	commercial keyed	shelving & cabinets
8	Training Device/ Simulation Center	solid core wood	commercial keyed	shelving & cabinets
9	Training Aid Storage	solid core wood	commercial keyed	shelving & cabinets
10	Audio/Visual Storage	solid core wood	commercial keyed	shelving & cabinets
11	Test Control Storage	solid core wood	commercial keyed	shelving & cabinets

Table 3. Doors, Hardware, Storage, and Shelving

	FUNCTIONAL AREA	DOORS	HARDWARE	STORAGE/ SHELVING
12	Break Area	N/A	N/A	shelving & cabinets
13	Physical Fitness Area	hollow metal	commercial keyed	N/A
14	Toilets	hollow metal	N/A	N/A
Dining Facility				
1	Dining Area	hollow metal	commercial keyed	N/A
2	Kitchen	hollow metal	commercial keyed	shelving & cabinets
Billeting				
1	Serving/Sleeping Area	solid core wood	commercial keyed	--
2	Toilet/Shower	solid core wood	--	--

TABLE 3 – NOTES

General All doors to be 3 ft x 7 ft unless otherwise noted.

1. Government Series 86 dead bolt lock.

Table 4. Mechanical Requirements – Part 1

	FUNCTIONAL AREA	H/O	H/U	C/O	C/U	OA VENTILATION	NCB
Administration							
1	General Administration	68	55	78	85	10 cfm/person	< 35
2	Medical/Aid Station	68	55	78	85	20 cfm/person	< 35
3	Supply	55	55	78	85	1.0 AC/hr	-
4	Publication Storage	55	55	78	85	1.0 AC/hr	-
5	Material Reproduction/ Mail Center	68	55	78	85	20 cfm/person	< 40
6	Weapons/ Administration Storage	68	55	78	85	20 cfm/person	-
7	Toilets/Showers/Lockers	68	55	78	85	50 cfm/WC & UL or 1.0 cfm/ft^2	< 40
Education							
1	Classrooms	68	55	78	85	10 cfm/person	< 35
2	Instructor Preparation/ Counseling	68	55	78	85	10 cfm/person	< 35
3	Multi-Purpose Training Area	68	55	78	85	10 cfm/person	< 35
4	Auditorium	68	55	78	85	10 cfm/person	< 30
5	Library	68	55	78	85	10 cfm/person	< 30
6	Learning Center	68	55	78	85	10 cfm/person	< 35
7	Distance Learning Center	68	55	78	85	10 cfm/person	< 35
8	Training Device/ Simulation Center	68	55	78	85	10 cfm/person	< 35
9	Training Aid Storage	55	55	--	--	0.25 cfm/ ft^2	--
10	Audio/Visual Storage	55	55	--	--	0.25 cfm/ ft^2	--
11	Test Control Storage	55	55	--	--	0.25 cfm/ ft^2	--
12	Break Area	68	55	78	85	10 cfm/person	< 40
13	Physical Fitness Area	55	55	78	85	20 cfm/person	< 45
14	Toilets	68	55	78	85	50 cfm/WC & UL or 1.0 cfm/ft^2	< 40
Dining Facility							
1	Dining Area	68	55	78	85	15 cfm/person	< 45
2	Kitchen	68	55	78	85	1.0 cfm/ ft^2 w/Hoods Ref: ACGIH Manual	<45
Billeting							
1	Sleeping Area	68	55	78	85	10 cfm/person	< 25
2	Toilet/Shower	68	68	78	85	1.0 cfm/ ft^2	< 40

TABLE 4 – ABBREVIATIONS

AC/hr	air changes per hour
cfm	cubic feet per minute
C/O	cooling/occupied, °F
C/U	cooling/unoccupied, °F
FD	floor drain
HB	hose bibb
H/O	heating/occupied, °F
H/U	heating/unoccupied, °F
NCB	balanced noise criterion
OA	outside air
fpm	feet per minute

TABLE 4 – GENERAL NOTES

1. Outside Air Ventilation rates are based on ANSI/ASHRAE Standard 62.1-2004 where the supply and return air distribution devices are ceiling mounted. If the distribution devices are located in the occupied zone reduce the air quantity by 50%. Regardless of where the air distribution devices are located the outside air quantity must be at least 15% of the total air circulated within the HVAC controlled space.
2. Exhaust Systems for special work processes that require an exhaust hood to capture particles being transported by the air stream must be designed in accordance with the American Conference of Governmental Industrial Hygienists (ACGIH) Industrial Ventilation Manual and ASHRAE Handbooks of Fundamentals and HVAC Applications.
3. NCB curves specify maximum noise criteria due to the space itself and all sources of normal interior and exterior noise due to HVAC systems and other building equipment.

Table 5. Mechanical Requirements – Part 2

	FUNCTIONAL AREA	PIPED SERVICE	PLUMBING	OTHER
Administration				
1	General Administration	CW	EDF	
2	Medical/Aid Station	CW/HW	SK	
3	Supply			
4	Publication Storage			
5	Material Reproduction/ Mail Center			
6	Weapons/ Administration Storage			
7	Toilets/Showers/Lockers	CW/HW/FD		
Education				
1	Classrooms			
2	Instructor Preparation/ Counseling			
3	Multi-Purpose Training Area			
4	Auditorium	FD/CW	EDF	
5	Library			
6	Learning Center			
7	Distance Learning Center			
8	Training Device/ Simulation Center	CA/VAC/CW	EDF/HB	Note 1
9	Training Aid Storage			
10	Audio/Visual Storage			
11	Test Control Storage			
12	Break Area	CW/HW/FD	SK/EDF	
13	Physical Fitness Area	CW/FD	EDF	
14	Toilets	CW/HW/FD		
Dining Facility				
1	Dining Area	CW/FD	EDF	
2	Kitchen	CW/HW/FD		
Billeting				
1	Serving/Sleeping Area			
2	Toilet/Shower	CW/HW		

TABLE 5 – ABBREVIATIONS

CA Compressed Air

CW Cold Water

EDF Electric Drinking Fountain

FD Floor Drain

HB Hose Bibb

HW Hot Water

SK Sink

TABLE 5 – NOTES

1. Training Device/Simulation Center: Utilities for this area may vary depending on equipment provided designer must have vender data prior to design activity.

Table 6. Electrical Requirements

	FUNCTIONAL AREA	LIGHTING	OUTLETS	NOTES
Administration				
1	General Administration	50 FC	2 duplex per 50 ft^2	4
2	Medical/Aid Station	70 FC	1 duplex per 10 LF of wall	1
3	Supply	30 FC	1 duplex per 20 LF of wall	
4	Publication Storage	30 FC	1 duplex per 20 LF of wall	
5	Material Reproduction/Mail Center	50 FC	1 duplex per 10 LF of wall	1
6	Weapons/Administration Storage	50 FC	1 duplex	
7	Toilets/Showers/Lockers	30 FC	1 duplex GFCI per 2 sinks	
Education				
1	Classrooms	70 FC	1 duplex per 10 LF of wall	
2	Instructor Preparation/Counseling	50 FC	1 duplex per wall	4
3	Multi-Purpose Training Area	50 FC	1 duplex per 10 LF of wall	1, 3
4	Auditorium	50 FC	1 duplex per 20 LF of wall	1, 3
5	Library	50 FC	1 duplex per 10 LF of wall	4
6	Learning Center	70 FC	1 duplex per 10 LF of wall	1
7	Distance Learning Center	50 FC	1 duplex per 10 LF of wall	1, 3
8	Training Device/ Simulation Center	50 FC	1 duplex per 10 LF of wall	1, 3
9	Training Aid Storage	20 FC	1 duplex	
10	Audio/Visual Storage	30 FC	1 duplex	
11	Test Control Storage	20 FC	1 duplex	
12	Break Area	50 FC	1 duplex per 10 LF of wall	
13	Physical Fitness Area	50 FC	1 duplex per 12 LF of wall	2
14	Toilets	30 FC	1 duplex GFCI per 2 sinks	
Dining Facility				
1	Dining Area	30 FC	1 duplex per 10 LF of wall	
2	Kitchen	50 FC	Minimum of 1 duplex per 10 LF of wall	
Billeting				
1	Serving/Sleeping Area	30 FC	1 duplex per 10 LF of wall	4
2	Toilet/Shower	30 FC	1 duplex GFCI	

TABLE 6 – NOTES

All Electrical Power System/Service outlets in spaces must be designed and constructed in accordance with NFPA 70, National Electrical Code and the actual equipment layout. All Classified areas must be explosion proof construction including lighting and power supply.

Lighting Systems must be designed in accordance with IESNA Lighting Handbook. The Lighting Power Densities in Watts/ST input must be in accordance with ANSI/ASHRAE/IESNA Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings.

1. Provide telephone, data, and power to support mission of the activity.
2. Provide power for programmed equipment.
3. Provide multi-level switching or dimming.
4. Provide Desktop or task lighting.

Table 7. Special Equipment and Ceiling Heights

	FUNCTIONAL AREA	SPECIAL EQUIPMENT	CEILING HEIGHT*
Administration			
1	General Administration		9 ft
2	Medical/Aid Station		8 ft
3	Supply		10 ft
4	Publication Storage		8 ft
5	Material Reproduction/Mail Center		8 ft
6	Weapons/Administration Storage		8 ft
7	Toilets/Showers/Lockers		8 ft
Education			
1	Classrooms		10 ft
2	Instructor Preparation/ Counseling		8 ft
3	Multi-Purpose Training Area	Audio/Visual	10 ft
4	Auditorium	Audio/Visual	varies w/size
5	Library		10 ft
6	Learning Center		10 ft
7	Distance Learning Center		8 ft
8	Training Device/Simulation Center		14 ft
9	Training Aid Storage		8 ft
10	Audio/Visual Storage		8 ft
11	Test Control Storage		8 ft
12	Break Area		8 ft
13	Physical Fitness Area		10 ft
14	Toilets		8 ft
Dining Facility			
1	Dining Area		10 ft
2	Kitchen		10 ft
Billeting			
1	Serving/Sleeping Area		8 ft
2	Toilet/Shower		8 ft

APPENDIX D

FIGURES

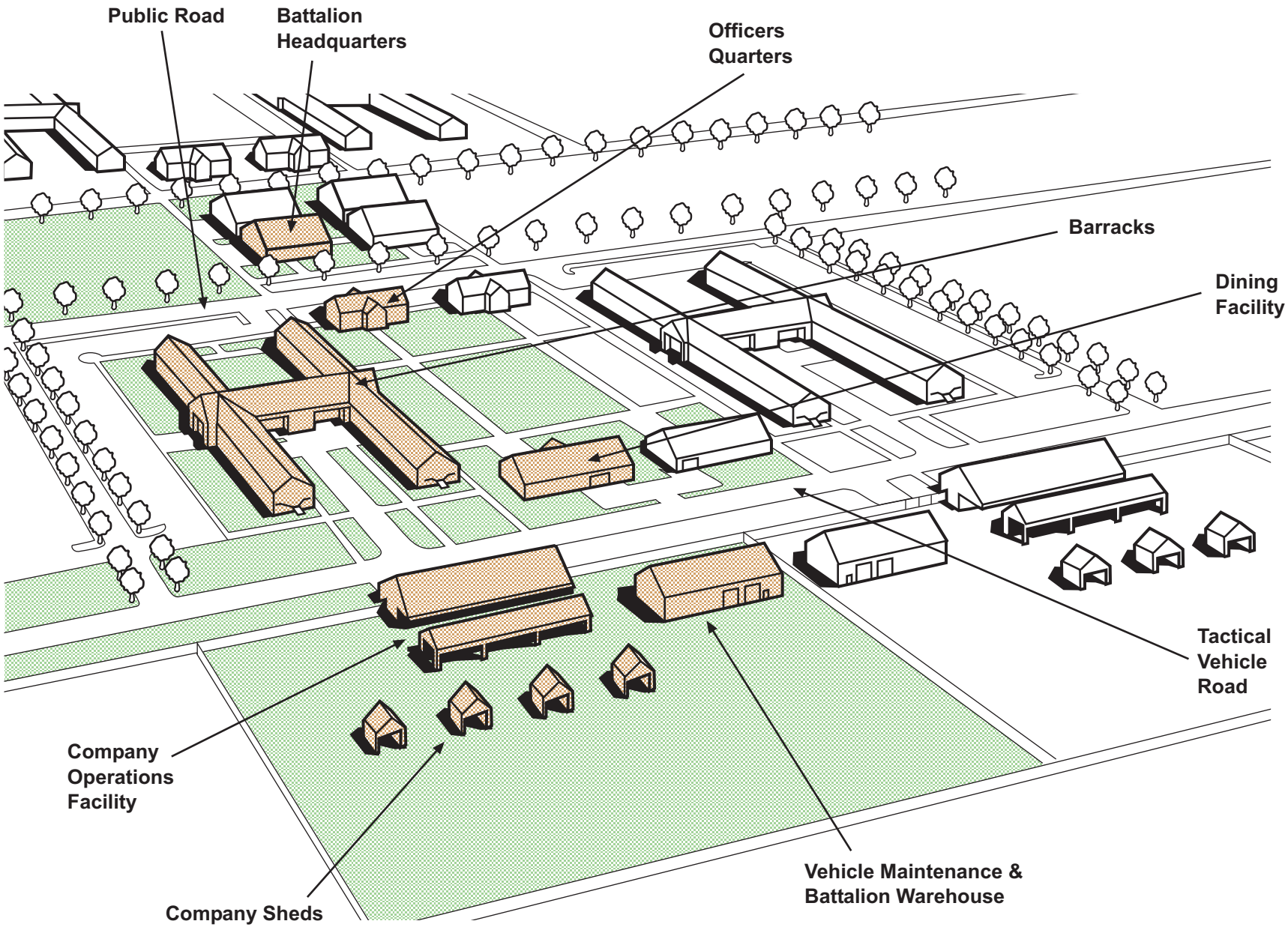


Figure 1. Battalion Set Site Arrangement

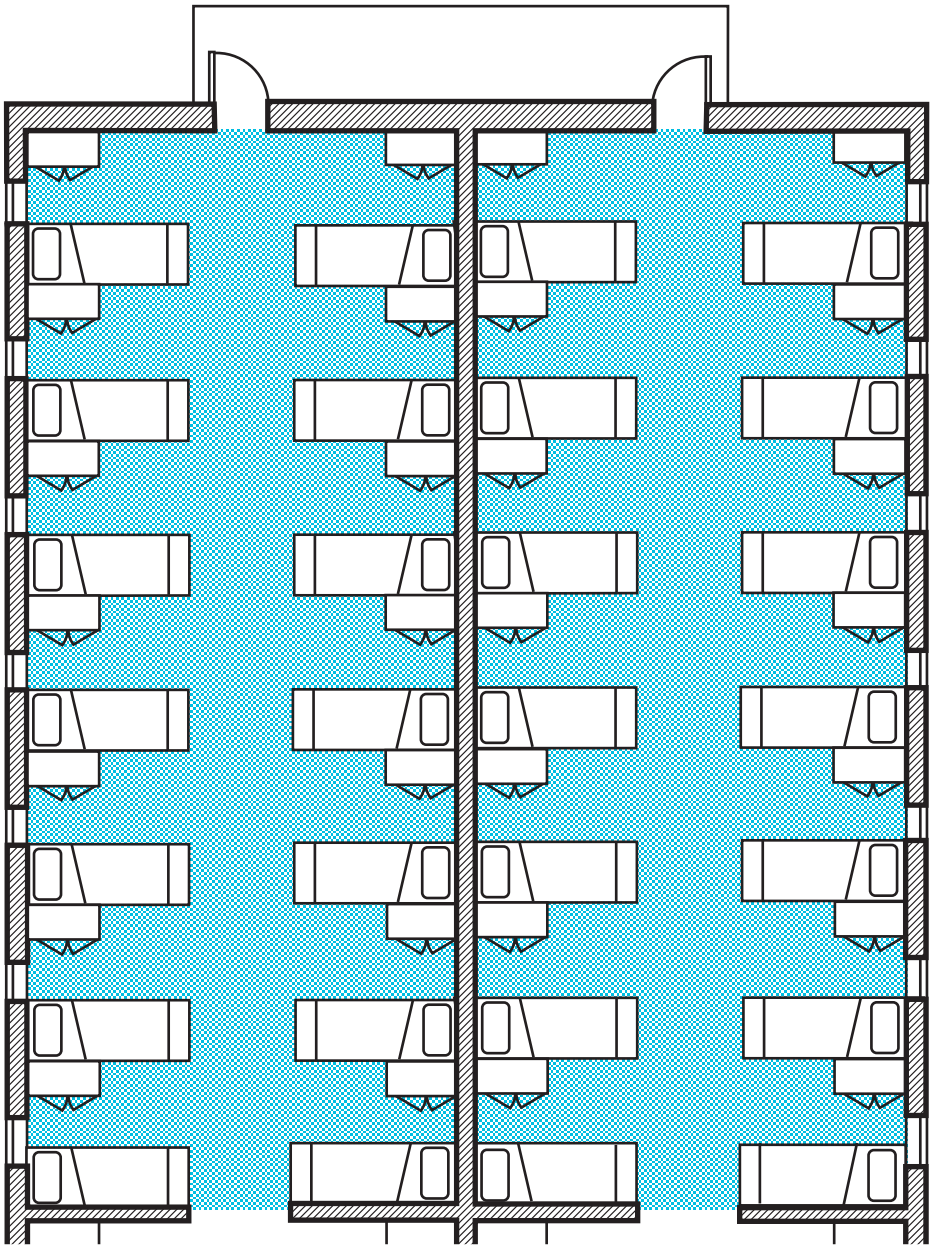


Figure 2. Barracks Partial Plan

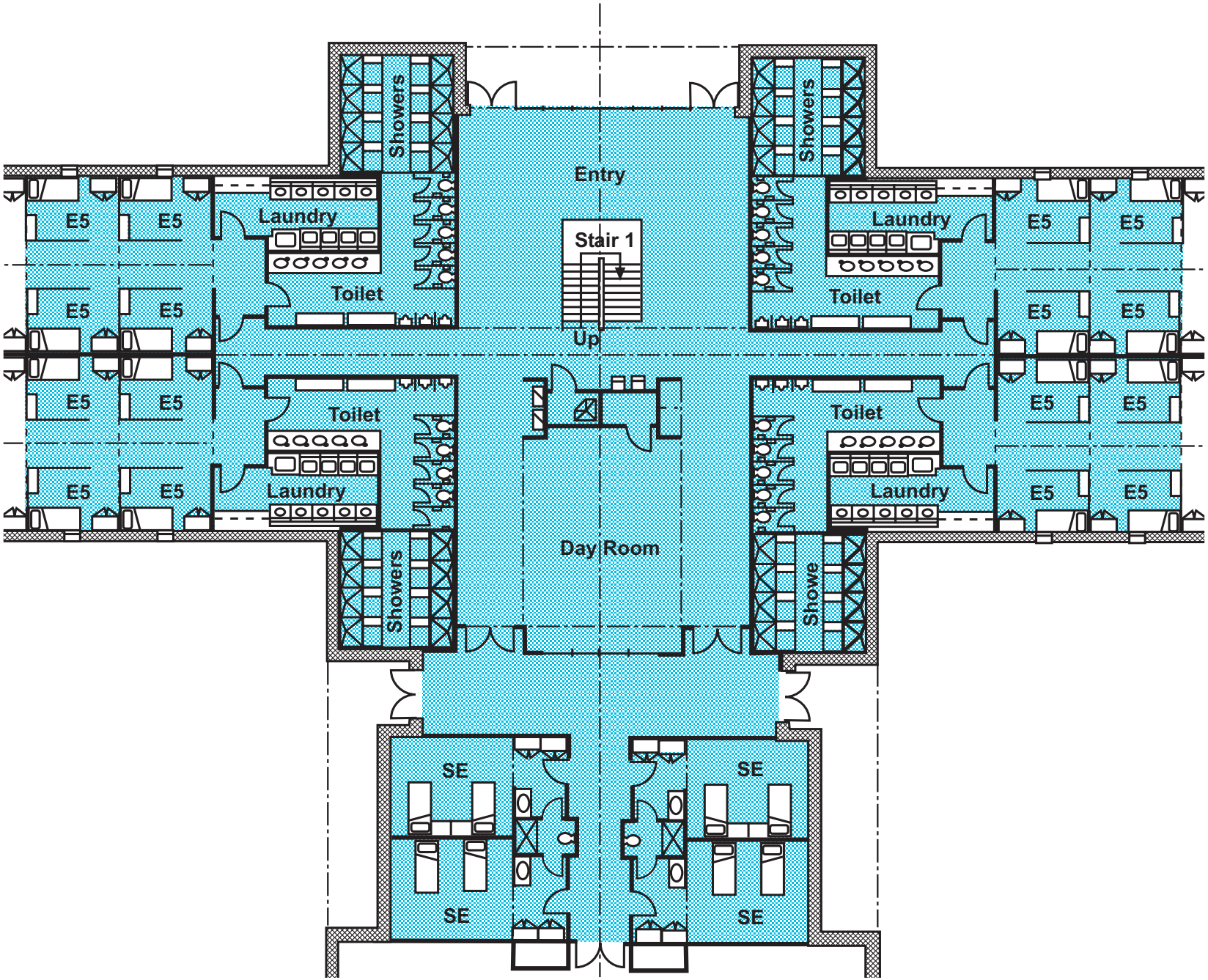
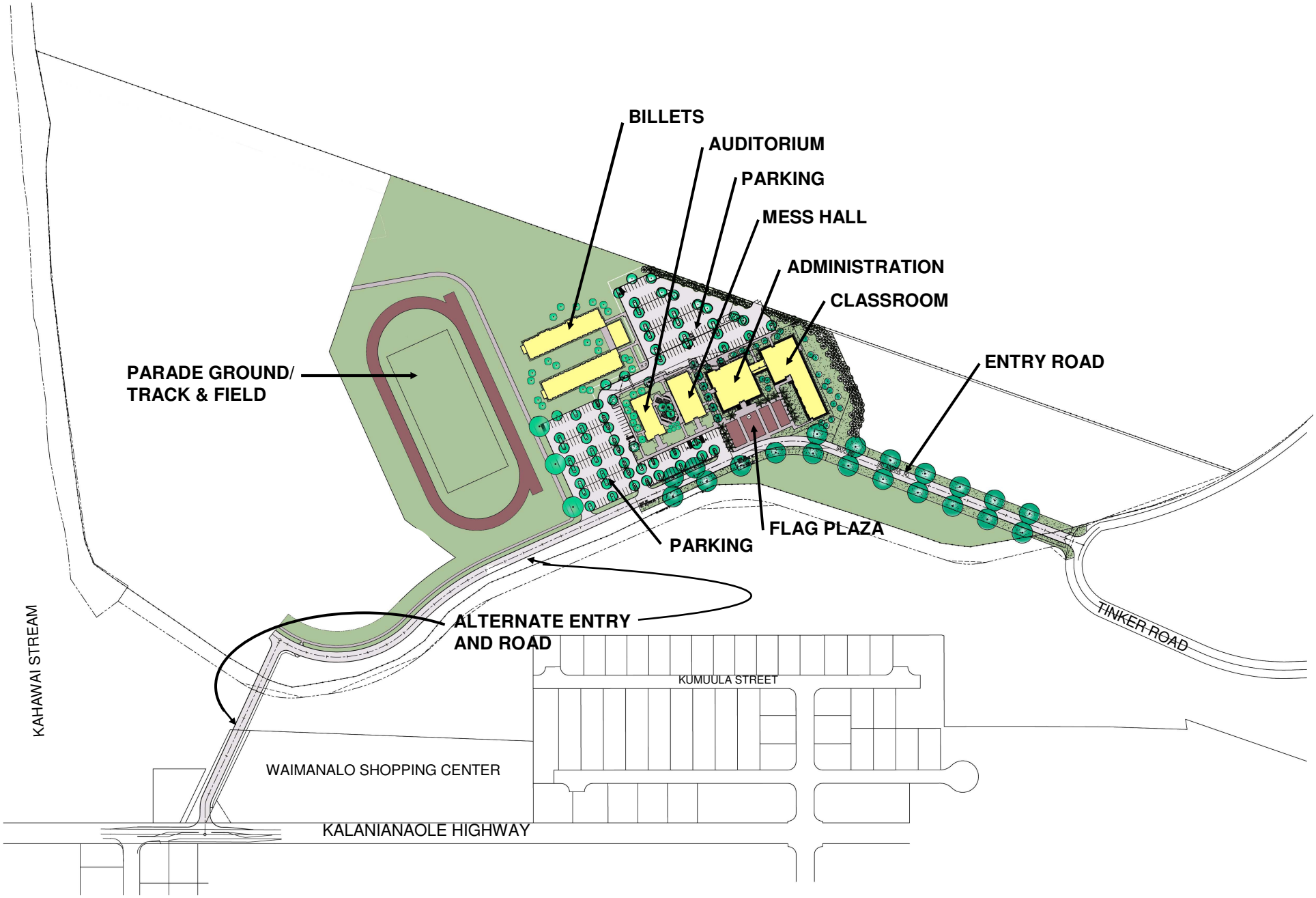


Figure 3. BOQ/BEQ Partial Plan



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